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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/517,828	12/15/2004	Ikuya Miyamoto	1823.1002	8697

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WASHINGTON, DC 20005

EXAMINER
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LEE, RIP A

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 12/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/517,828

Applicant(s)

MIYAMOTO, IKUYA

Examiner

Rip A. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12-15-04; 01-25-05; 03-30-06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1, 2, 4-6, 8 and 10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Mehta *et al.* (U.S. 6,844,389).

Mehta *et al.* teaches polymer nanocomposites wherein the base resin is an ethylene homopolymer or ethylene copolymer (LDPE, LLDPE, HDPE, and metallocene prepared plastomers); see col. 4, lines 20-40 and 54-59. Intercalated clay is commercially available Cloisite® clays that have been ion exchanged with onium salts such as 2M2HT (col. 5, lines 48+). Compatibilizing agent is also used to improve dispersion of filler. This component is prepared by grafting *via* peroxides about 0.1-8 wt % of maleic anhydride onto base resin such as polyethylene (col. 6, lines 5-20 and 59). Composites are prepared by dry blending concentrate pellets and base resin pellets followed by compounding in an extruder (col. 9, lines 47-52).

Example 1 shows a composite comprising HDPE, intercalated clay, and HDPE grafted with about 2 % maleic anhydride as the compatibilizer. A corresponding masterbatch is prepared with HDPE, clay containing 0.52 wt % silane coupling agent, and HDPE-g-MA. In examples 2 and 3, about 3 wt % of EVA (19 or 28 wt % vinyl acetate) is used as the compatibilizing agent. A LLDPE (ethylene/1-hexene copolymer) is used as the base resin in example 5, and examples 6-8 show use of ethylene/butene HDPE as the polyolefin matrix. In example 9, a masterbatch is prepared using 25 wt % of EVA, 25 wt % of HDPE, and 50 wt % of intercalated clay.

Mehta *et al.* does not disclose the spectral properties of HDPE-g-MA or EVA modified polyolefins, however, in view of the fact that the composition of the prior art is essentially the same as that claimed, one having ordinary skill in the art would have a reasonable basis to believe that the claimed features are inherently possessed by the polymer in Mehta *et al.* Since the PTO can not conduct experiments, the burden of proof is shifted to the Applicants to establish an unobviousness difference. *In re Fitzgerald*, 619 F.2d. 67, 205 USPQ 594 (CCPA 1980). See MPEP § 2112-2112.02.

Even if the properties of the polymer of the instant claims and the prior art examples are not the same, it would have been obvious to one of ordinary skill in the art to make the polymers having the claimed properties because it appears that the references generically embrace the claimed polymers, and the person of ordinary skill in the art would have expected all

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embodiments of the reference to work. Applicants have not demonstrated that the differences, if any, between the claimed product and the products of the prior art examples give rise to unexpected results.

5. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dontula *et al.* (U.S. 6,841,226) over Mehta *et al.*

Dontula *et al.* teaches a composition comprising a polyethylene melt-blended with smectite clay intercalated with oxylated alcohol wax (non-ionic surfactant). The reference does not teach use of modified polyolefin. Mehta *et al.* teaches polyethylene-based nanocomposites wherein compatibilizing agent is also used to improve dispersion of filler. Where compatibilizing agent is not used, the composition suffers reduced melt strength. The compatibilizing agent is prepared by grafting *via* peroxides about 0.1-8 wt % of maleic anhydride onto base resin such as polyethylene (col. 6, lines 5-20 and 59). One having ordinary skill in the art would have found it obvious to incorporate compatibilizing agent as described in Mehta *et al.* in the composition of Dontula *et al.* in order to achieve a homogeneously dispersed clay filler, and thereby arrive at the composition of the instant claims. Mehta *et al.* does not disclose the spectral properties of HDPE-g-MA or EVA modified polyolefins, however, in view of the fact that the composition of the prior art is essentially the same as that claimed, one having ordinary skill in the art would have a reasonable basis to believe that the claimed features are inherently possessed by the polymer in Mehta *et al.* Since the PTO can not conduct experiments, the burden of proof is shifted to the Applicants to establish an unobviousness difference. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Even if the properties of the polymer of the instant claims and the prior art examples are not the same, it would have been obvious to one of ordinary skill in the art to make the polymers having the claimed properties because it appears that the references generically embrace the claimed polymers, and the person of ordinary skill in the art would have expected all embodiments of the reference to work. Applicants have not demonstrated that the differences, if any, between the claimed product and the products of the prior art examples give rise to unexpected results.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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November 13, 2006



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